

## 60W AVIONICS LDMOS

The high power transistor part number ILD0912M60 is designed for the frequency band 960-1215 MHz. Operating at 10us/10% pulse conditions this LDMOS FET device supplies a minimum of 60 watts of power across the instantaneous operating bandwidth of 960-1215 MHz. All devices are 100% screened for large signal RF parameters.



### Silicon LDMOS FET

- High Power Gain
- Superior thermal stability

### Class AB Operation

- Gate biased to  $I_{DQ} = 550 \text{ mA}$

### Configuration

- Common Source

### Gold Metal

- Maximum Reliability

### Package

- Thermally enhanced
- Pb-free and RoHS-compliant

### Epoxy Sealed Lid

- Gross Leak Qualified

### RF Test Fixture

- Broadband
- Matched to  $50\Omega$
- Long-term Correlation
- 100% Device RF Screening
- No External Tuning required

## TYPICAL DATA TYPICAL DATA TYPICAL DATA TYPICAL DATA

Freq (MHz)	$P_{IN}$ (W)	RL (dB)	Pout (W)	Gp (dB)	Gf (dB)	Id (A)	nd (%)	Droop (dB)	VSWR - LMT 3:1 (P-F)
960	1.4	-18.0	60	16.41		8.600	64.5	0.14	P
1090	1.4	-17.0	60	16.48	0.85	8.610	64.3	0.07	P
1215	1.6	-18.0	60	15.63		8.700	62.5	0.03	P

**MAXIMUM RATINGS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Drain-Source Voltage	$V_{DSS}$	--	65	V	--
BD	Gate-Source Voltage	$V_{GS}$	-0.5	12	V	--
BD	Storage Temperature Range	$T_{STG}$	-40	+150	°C	--
BD	Operating Junction Temperature Range	$T_J$	-55	+200	°C	--
Note	Screen 'BD' = parameter qualified By Design.					

**THERMAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance	$R_{TH(JC)}$	--	0.17	°C/W	$V_{DS}=30V, I_{DQ}=550mA, T_F=25\pm 5^\circ C, P_{OUT}=60W, 10\mu s/10\%$ .
Note	Screen 'BD' = parameter qualified By Design.					

**PROCESSING SPECIFICATIONS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	DC Wafer Probe	--	--	--	--	Per Integra specification.
Q1	Wafer DC and RF Qualification	--	--	--	--	Per Integra specification.
LM	Wire Bond Strength	--	--	--	--	Line monitor per Integra specification.
100%	Pre-cap visual inspection	--	--	--	--	Per Integra specification
100%	Gross leak test	--	--	--	--	MIL-STD-750D, Method 1071, Test Condition C
Note	Screen 'Q1' = parameter is qualified by assembly and test of 3 pieces minimum per wafer.					
Note	Screen 'LM' = parameter is qualified by assembly line monitor.					

**DC ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Drain-Source Breakdown Voltage	$BV_{DSS}$	65		V	$I_D = 10\mu A, V_{GS} = 0V, T_F = 25\pm 5^\circ C$
100%	Drain Leakage Current	$I_{DSS}$		1	$\mu A$	$V_{DS} = 30V, V_{GS} = 0V, T_F = 25\pm 5^\circ C$
100%	Gate Threshold Voltage	$V_{GSTH}$	2	4	V	$I_{DQ} = 550mA, V_{DS} = 30V, T_F = 25\pm 5^\circ C$

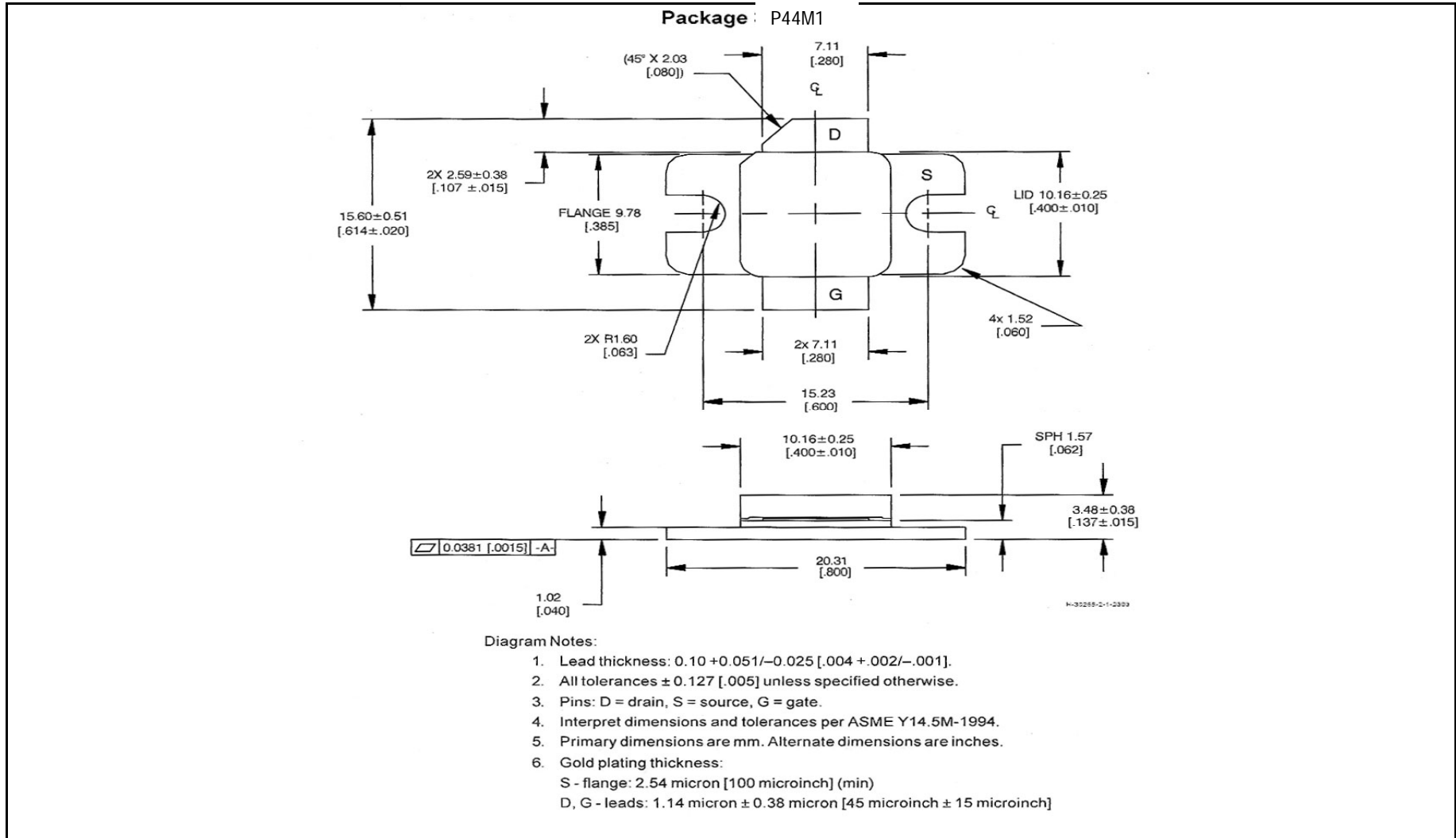
**RF ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	RL	-18	-10	dB	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
100%	Input Power	Pin	0.95	1.69	W	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
100%	Power Gain	$G_p$	15.5	18	dB	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
100%	Drain Efficiency	$N_d$	42	75	%	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
100%	Load Mismatch Tolerance	VSWR-LMT	3:1	--	--	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3,$ Rotate 3:1 output VSWR through 360° phase. Survival.
100%	Gain Flatness	GF	--	2.5 dB	dB	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
100%	Signal Amplitude Droop	Droop	-0.5	0.5	dB	$V_d=30V, P_{OUT} = 60W, 10\mu s, 10\%, I_{dq}=550mA, T_F=25\pm 5^\circ C, F=F1, F2, F3.$
Note 1	F1= 960 MHz, F2= 1090 MHz, F3= 1215 MHz.					
Note 2	$T_F$ = Device flange temperature.					
Note 3	Screen 'BD' = parameter qualified By Design.					

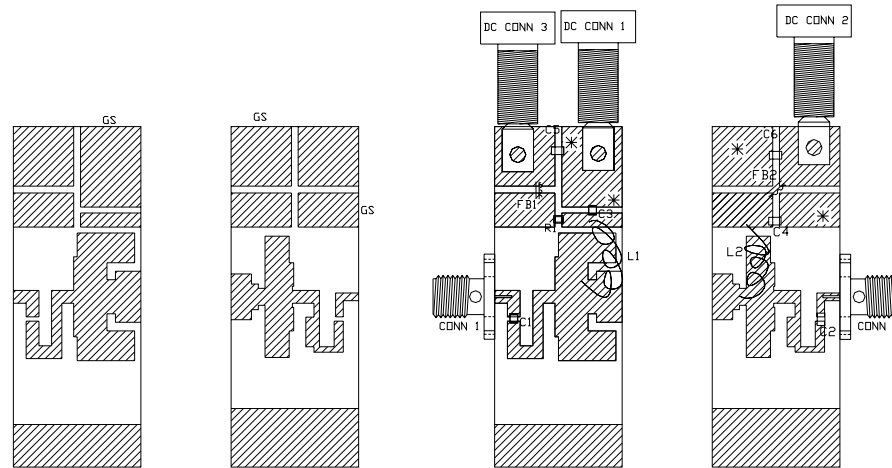
**RF TEST FIXTURE IMPEDANCE CHARACTERISTICS**

Frequency (MHz)	$Z_{IF} (\Omega)$	$Z_{OF} (\Omega)$
960	2.40 - j0.60	3.67 - j2.42
1090	2.75 - j0.29	3.92 - j1.57
1215	2.83 - j0.32	4.03 - j1.20

**PACKAGE DIMENSIONAL OUTLINE DRAWING**

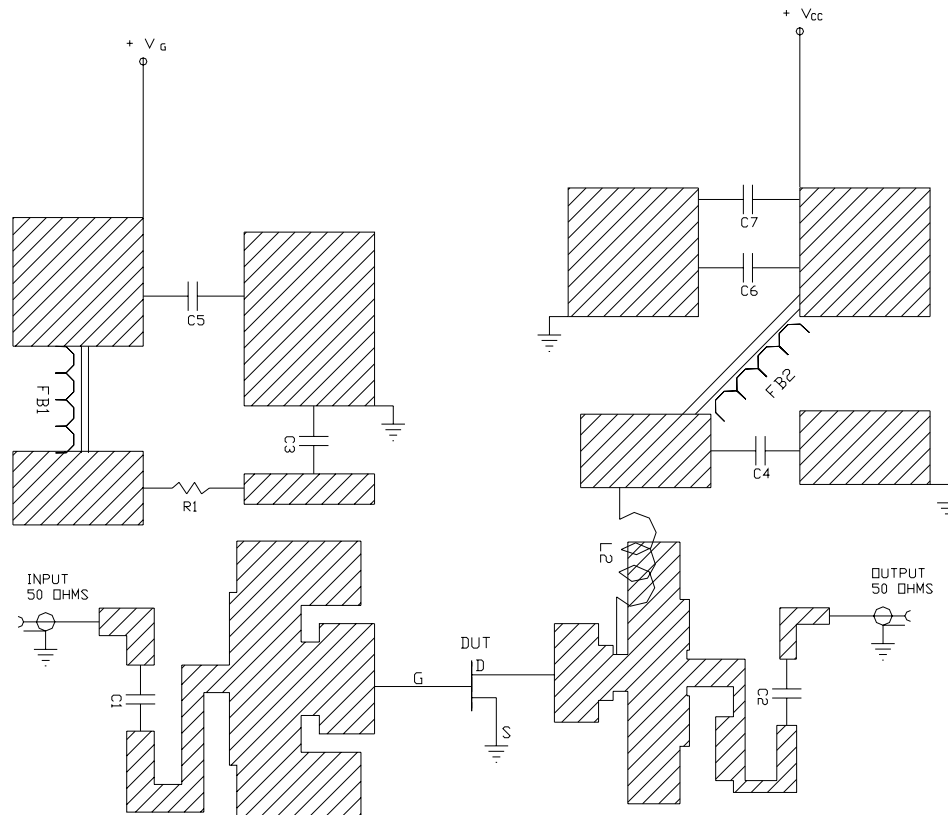


**RF TEST FIXTURE**



COMPONENT	DESCRIPTION
DUT	TRANSISTOR #ILD0912M60 MOUNT HARD TO THE RIGHT
PC BOARD	ROGERS #RD 6010, 25MILL, 1oz. Copper
C1, C2, C3, C4	CHIP CAPACITOR 33pF
C5	CHIP CAPACITOR 3300pF
C6	CHIP CAPACITOR 1uF
C7 (NOT SHOWN)	ELECTROLYTIC CAPACITOR, 4700uF / 50V
R1	CHIP RESISTOR 10ohms
FB1, FB2	FERRITE BEAD
L1, L2	6 TURNS WIRE #22 DIAMETER=100 MILS
GS (4 PLACES)	GROUND SHIM, COPPER, TH=0.001"
CONN 1, CONN 2	SMA CONNECTOR, DS #2052-5636-02
INPUT PC BOARD CARRIER	2 INCH BRASS-02 (0.75")
OUTPUT PC BOARD CARRIER	2 INCH BRASS-02 (0.75")
TRANSISTOR CARRIER	2 INCH COPPER-15
TRANSISTOR CLAMP	NDRYL CLAMP-15
ALUMINUM HEAT SINK	2 INCH HEATSINK-11
DC CONN 1	BANANA JACK, BLACK
DC CONN 2	BANANA JACK, RED
DC CONN 3	BANANA JACK, BLUE
NOTE	FIXTURE HARDWARE DRAWINGS AVAILABLE ON REQUEST

**RF TEST FIXTURE**



**ELECTRICAL SCHEMATIC**



**DEFINITIONS**

<b>Data Sheet Status</b>	
Proposed Specification	This data sheet contains proposed specifications.
Preliminary Specification	This data sheet contains specifications based on preliminary measurements and data.
Product Specification	This data sheet contains final product specifications.
<b>Maximum Ratings</b>	
Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only. Operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to maximum values for extended periods of time may affect device reliability.	

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